

IN THE CLAIMS:

1. (Currently Amended) A scribing device for a brittle material substrate, which continuously heats a region along a line to be scribed on a surface of the brittle material substrate at a temperature lower than a softening point of the brittle material substrate and, also, continuously cools a region in the vicinity of the heated region, thereby forming a blind crack along said line to be scribed, said scribing device characterized by comprising:

5 a light projection unit which emits light; source;

 a polarizing beam splitter which splits light from the light source depending on a polarization state;

10 an optical fiber which is arranged such that emitted light from said light projection unit is reflected on a lower face of said brittle material substrate and, then, light in a specific polarization direction having transmitted through said polarizing beam splitter enters the region of the blind crack formation in the vicinity of the cooled region on the surface of said brittle material substrate and the light reflected by the blind crack is returned to said polarizing beam splitter;

15 a light reception unit which receives, through said optical fiber, the light emitted from said light projection unit through said optical fiber and reflected by the split by said polarizing beam splitter from the reflected light from said blind crack; and

 a determination unit which provides a window comparator so as to distinguish whether a level of light receiving signal obtained from said light reception unit is between predetermined thresholds or not, wherein

a shape state of the blind crack is checked based on an output from said determination part.

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Currently Amended) A scribing method for a brittle material substrate, in which a region along a line to be scribed on a surface of a brittle material substrate is continuously heated at a temperature lower than a softening point of the brittle material substrate and, also, a region in the vicinity of the heated region is continuously cooled, so that a blind crack is

5 formed along said line to be scribed, said scribing method characterized by:

reflecting light~~splitting light from a light source with the use a polarizing beam splitter~~
depending on a polarization state;

10 allowing light in a specific polarization direction, having transmitted through said
polarizing beam splitter, to enter, through an optical fiber, on a lower face of said brittle
material substrate and, then, entering the reflected light into~~through an optical fiber~~, the region
of the blind crack formation in the vicinity of the cooled region on the surface of said brittle
material substrate;

15 converting a light amount level of received light into a signal, after a reception, returning
the light reflected by the blind crack to said polarizing beam splitter through said optical fiber,
of light which is reflected by said;

receiving, with a light reception element, the light split by said polarizing beam splitter
from the reflected light from the blind crack; and performing scribing while making a good or
bad determination on a condition of the blind crack formation by

20 distinguishing whether a level of light receiving signal obtained from said light reception
element is between predetermined thresholds or not, thereby performing scribing while checking
a condition of the blind crack formation.

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Previously Presented) An automated breaking line for a brittle material substrate, characterized by comprising: at least one scribing device for a brittle material substrate according to claim 1; and at least one device for breaking the brittle material substrate.

16. (Previously Presented) An automated breaking line for a brittle material substrate, characterized by comprising: at least one scribing device for a brittle material substrate formed by the method according to claim 5; and at least one device for breaking the brittle material substrate.